

# GEIS

## SecoVac Medium Voltage Vacuum Contactor

GEIS Electrical Protection

Safer Smarter Greener





In 1879,  
Thomas Edison  
devised The very first  
circuit breaker...



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**I find out what the world needs...  
then I proceed to invent it.**

—— Thomas A. Edison

## About GEIS

GEIS was formed as a spin-off from the original GE Industrial Solutions China operation in December 2019. The company operates under the AEG brand in China and the GEIS brand globally.

Reinventing a 130-year legacy with an entrepreneurial spirit, GEIS delivers products built on GE's original technologies, incorporating innovations for the latest electrification applications, and a steadfast commitment to the highest standards of quality.

## The Evolution of Business and Brand



Note: GEIS brand is also used in China



## Quality is Built-in

The Vertical Integrated Manufacturing Center

- Established in 2000, the 1st North Asia facility of GE Industrial Solutions
- Localize US and European products to serve the local market
- Evolving into a Global platform of Cast Coil Dry-Type Transformer, Air Circuit Breaker, IEC and NEMA medium voltage VCB and switchgear for GE Industrial Solutions
- A GE Global Star Facility



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**GEIS deliver complete range of products for the evolving electrification needs:**

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**SecoVac** VCB



**M-PACT Plus** ACB



**Elfa** Series MCB/RCBO



**EV** Charger



**SecoGear** MV Switchgear



**RMU** Gas Insulated  
Switchgear



**WaveCast** Transformer



**MLS** LV Switchgear





## **SecoVac CR193 Vacuum Contactor**

### **Catalogue**

**A**

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**B**

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#### **Electrical circuit Diagram**

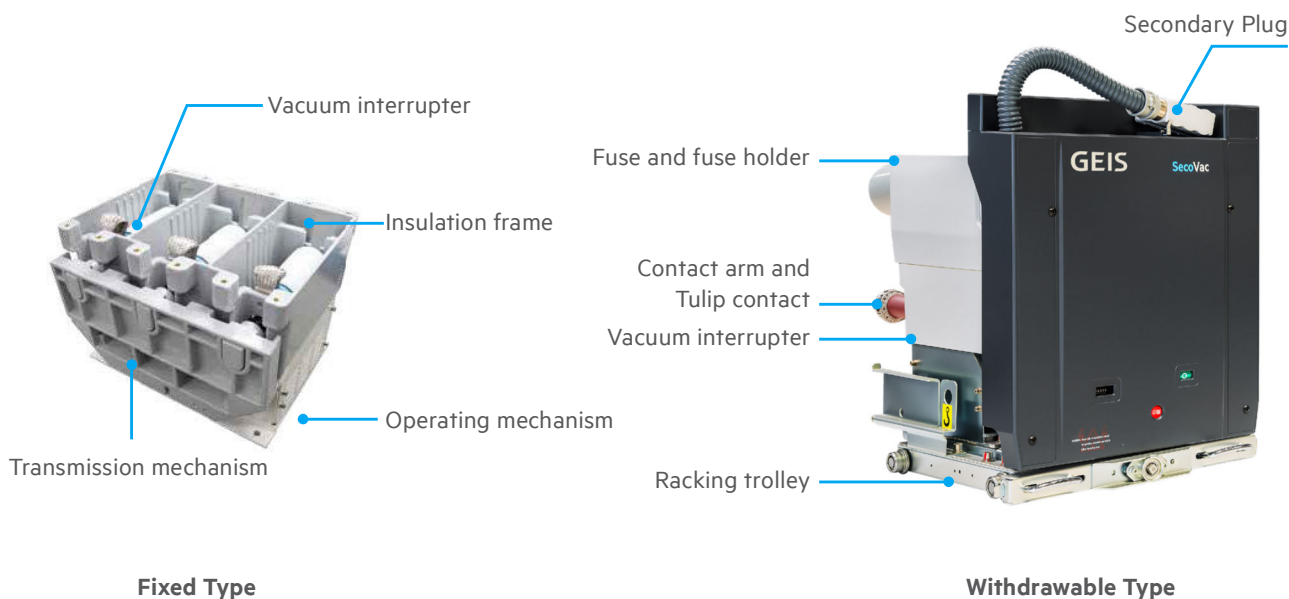
**E**

#### **Fuse Type**

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#### **Ordering Check List**

## Product Description



### Product Overview

SecVrao medium vacuum contactor has a new generation electromagnetic operating mechanism and a high- performance vacuum interrupter, providing excellent electrical and mechanical performances.

The product conforms to GB.DL,IEC related standards and can be applied to rated voltage 12kV and below,and three-phase AC system with rated frequency 50/60Hz ,especially suitable for the control and protection of motor, transformer, capacitor bank and other electrical equipment, and other needs for frequent start-stop or switching.

With its high reliability and excellent performance, SecoVac medium voltage vacuum contactors are widely used in power, industrial and mining enterprises, petrochemical, paper making,metallurgy and other fields in need of electrical equipment control and protection.

### Product Features

- Excellent insulation performance to ensure personal and equipment safety
- Based on the rated current of 400A, providing optional mechanical and electrical hold modes, with a mechanical life up to 1 million operations
- Flexible to mount for both withdrawable and fixed types, meeting the requirements of miniaturized switchgears
- Modular design, unique and novel; Rich expansion function, easy to control from afar
- The application of galvanizing process with strong anti-corrosion performance ensures the normal use of the handcar in various harsh environments
- Provided with silver-plated spring contact fingers in the base groove, ensuring electrical and thermal stability



### Quick Model Selection

CR193	-7.2	M	/M	80	-50
<b>Product series</b> <b>CR193</b> <b>vacuum contactor</b>	<b>Voltage level</b>	<b>Holding mode</b>	<b>Protection method</b>	<b>Current of fuse</b>	<b>Breaking current</b>
	7.2-12kV	M: Mechanical retention	M: Motor protection	6.3, 10-355A	50kA
	12-12kV	E: Electrical retention	T: Transformer protection		
			None: No fuse		

### Product Standard

IEC 60470	"High-voltage alternating current contactors and contactor-based motor-starters"
IEC 60694	"Common specifications for high-voltage switchgear and controlgear standards"
IEC 60632-1	"High-voltage motor starters Part1:Direct-on-line(full voltage) a. c. starters"
IEC 60282-1	"High-voltage fuses Part 1: Current-limiting fuses"
IEC 60071-1	"Insulation co-ordination. Part 1: Definitions, principles and rules"

Fuses size and impactor type shall comply with DIN 43625 and Bs 2692 standards.

Fuse electrical properties shall comply with IEC60282 standard.

### Environmental Data

- **The conditions of temperature**
  - The ambient air temperature does not exceed 40 °C
  - The minimum ambient air temperature is -25°C
  - The average value of ambient air temperature measured over a period of 24 h, does not exceed 35°C
- **The conditions of humidity( 25°C )**
  - The average value of the relative humidity, measured over a period of 24h, does not exceed 95%
  - The average value of the relative humidity, measured over a period of one month, does not exceed 90%
  - The average value of the water vapour pressure, over a period of 24h, does not exceed 2.2kPa
  - The average value of the water vapour pressure, over a period of one month, does not exceed 1.8 kPa
- **The conditions of earthquake intensity**
  - No more than 8 degree
- **The conditions of altitude**
  - The altitude does not exceed 1000m
  - We can also offer the product which can exceed 1000m altitude, buyer need to check with the manufacture firstly when placing order
- **Others**
  - Storing place should be free from condensation, fire, explosion, chemical corrosion, severe dirty and heavy shakes condition
  - The ambient air is not significantly polluted by dust, smoke, corrosive and/or flammable gases, vapors or salt. EMI should not exceed 1.6kV in the secondary system

## Selection Guide

### Vacuum contactor

Rated voltage		kV	7.2	12
Rated insulation level	Lightning impulse withstand voltage (peak)	kV	60	75
	Power frequency withstand voltage (1 min)		32	42
Rated frequency		Hz	50/60	50/60
Rated current		A	400	400
Rated breaking current		kA	4	4
Rated closing current		kA	4	4
Limit breaking current		kA	4.5	4.5
Rated short-time withstand current (4s)		kA	4	4
Overload withstand current (1s)		kA	8	8
Maximum rated peak withstand current		kA	10	10
Rated mode of operation			Long duty system	Long-term work schedule
Ways to keep		class	Mechanical hold electrical hold	Mechanical hold electrical hold
Mechanical life		Ten thousand times	30	30
Electrical Life	Rated current	Ten thousand times	100	100
	AC-3		25	25
	AC-4		1	1

### Vacuum contactor — fuse combination

Rated voltage		kV	7.2	12
Rated insulation level	Lightning impulse withstand voltage (peak)	kV	60	75
	Power frequency withstand voltage (1 min)		32	42
Rated frequency		Hz	50/60	50/60
Motor protection current rating	(Depends on the fuse)	A	25~355	6.3~224
Transformer protection rated current	(Depends on the fuse)	A	6.3~224	6.3~224
Rated short circuit breaking current		kA	50	50
Rated handover current		A	≤ 3200	≤ 3200
Mechanical life		Ten thousand times	100*	100*
Electrical Life	Rated current	Ten thousand times	100	100
	AC-3		25	25
	AC-4		1	1

\* For the mechanical endurance of mechanical holding: replace a new mechanical lock every 300,000 times



## Selection Guide

### Mechanical characteristics

Interphase center distance		mm	$150 \pm 0.5$
Contact opening		mm	$6 \pm 1$
Overstroke		mm	$2.5 \pm 0.5$
Average closing speed	Electromagnetic mechanism	m/s	$0.2 \sim 0.4$
Average opening speed	Electromagnetic mechanism	m/s	$0.4 \sim 1$
Closing time	Mechanical hold	ms	$\leq 100, \leq 180^*$
	Electrical holding		$\leq 150$
Opening time	Mechanical hold	ms	$\leq 70, \leq 160^*$
	Electrical holding		$\leq 100$
Closing bounce time		ms	Contactors $\leq 2$ Contactors $\leq 3$
Three-phase switching synchronization		ms	$\leq 2$
Circuit resistance per phase			Contactors $\leq 150$ Contactors $\leq 200$
Weight		kg	Contactors: 35 Contactors: 88

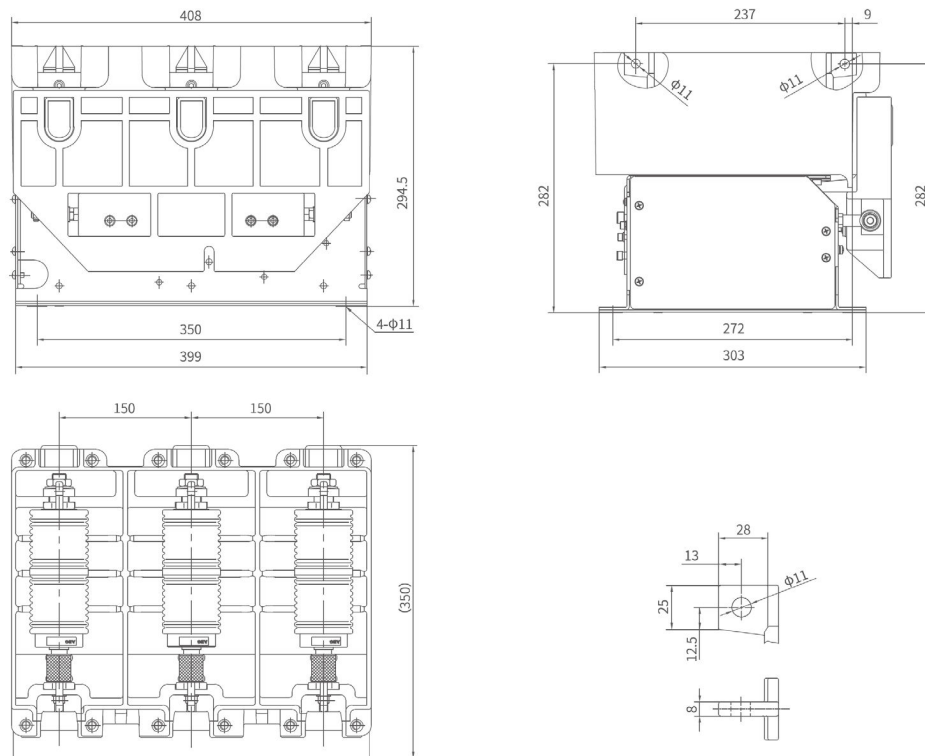
\* The value is a value that includes the operating time of the closing relay and the opening relay

### Operating mechanism

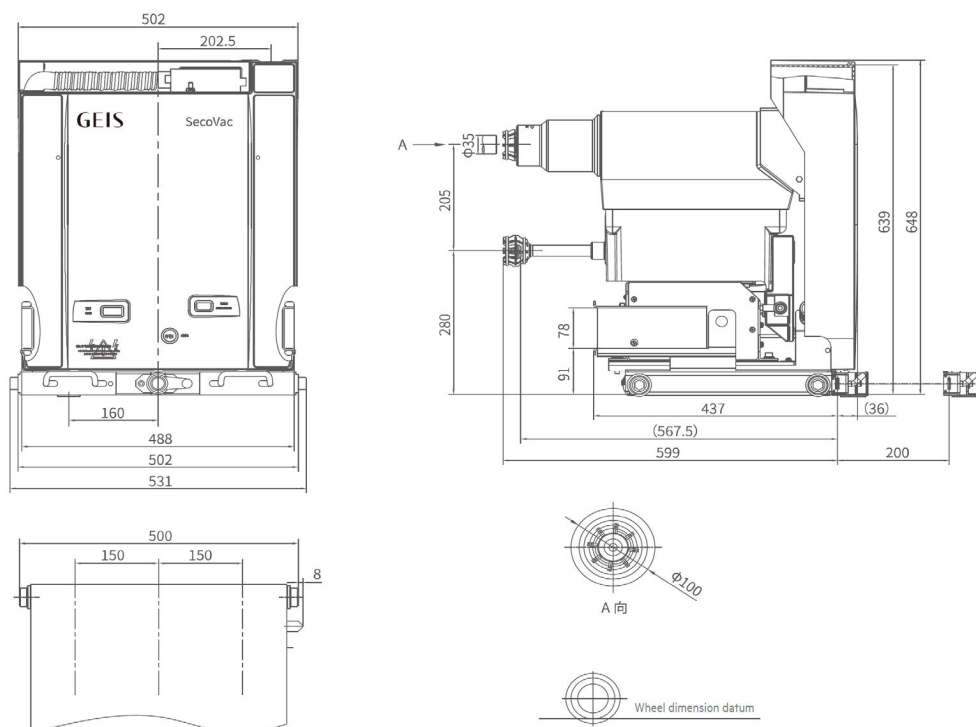
Rated operating voltage, current (mechanical hold)	AC/DC220V	Closing current 4.5A	Opening current 6A
	AC/DC110V	Closing current 9A	Opening current 12A
Rated operating voltage, current (electric hold)	AC/DC220V	Closing current 4.5A	Opening current 0.5A
	AC/DC110V	Closing current 9A	Opening current 1A

## Overall Dimension

### Fixed



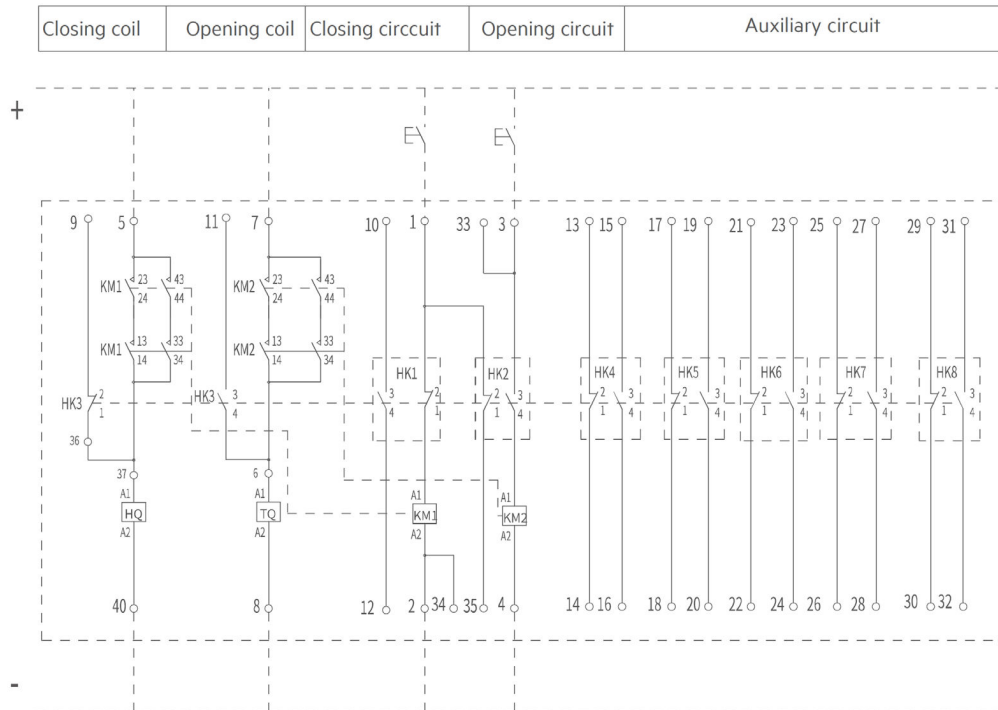
### Withdrawable



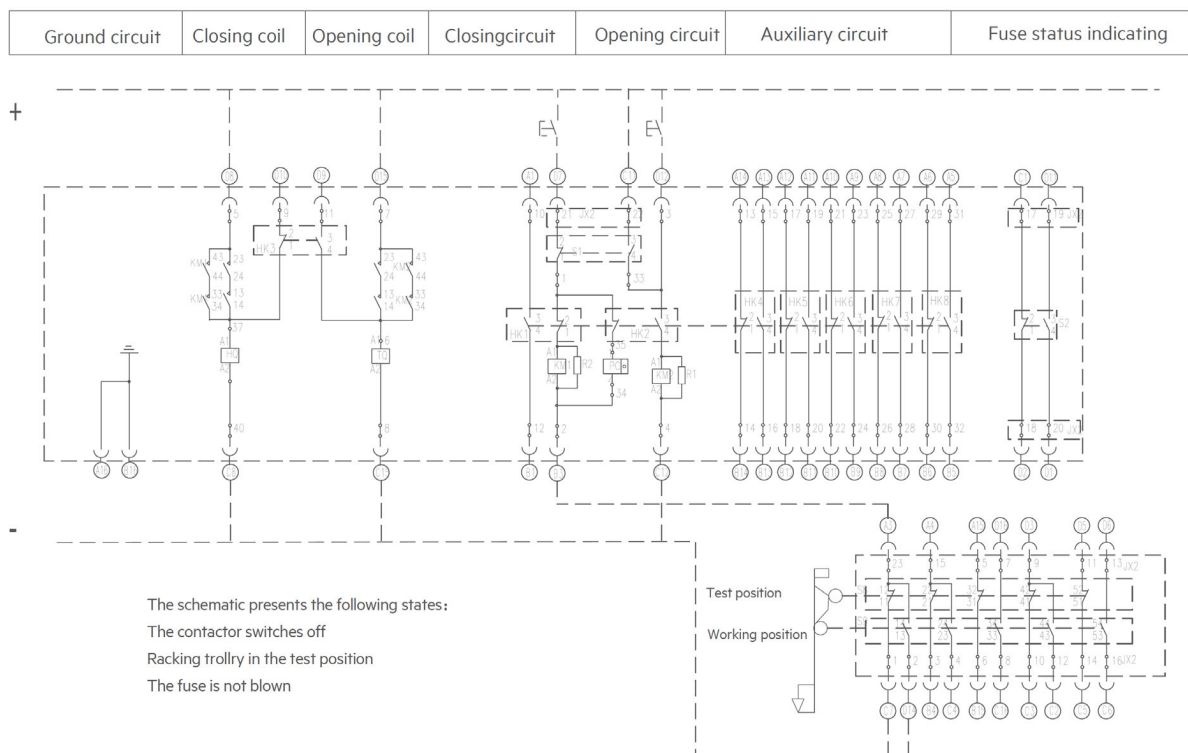


# Electrical circuit Diagram

## Fixed contactor, DC, mechanical holding

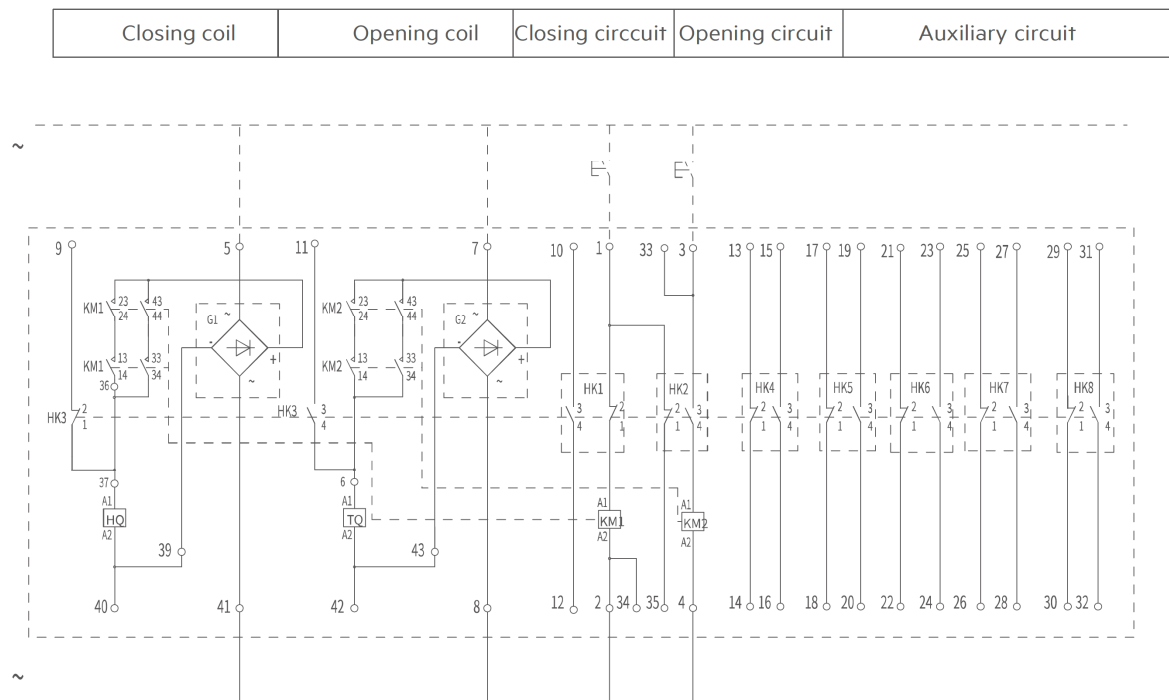


## Withdrawable contactor - fuse combination, DC, mechanical holding



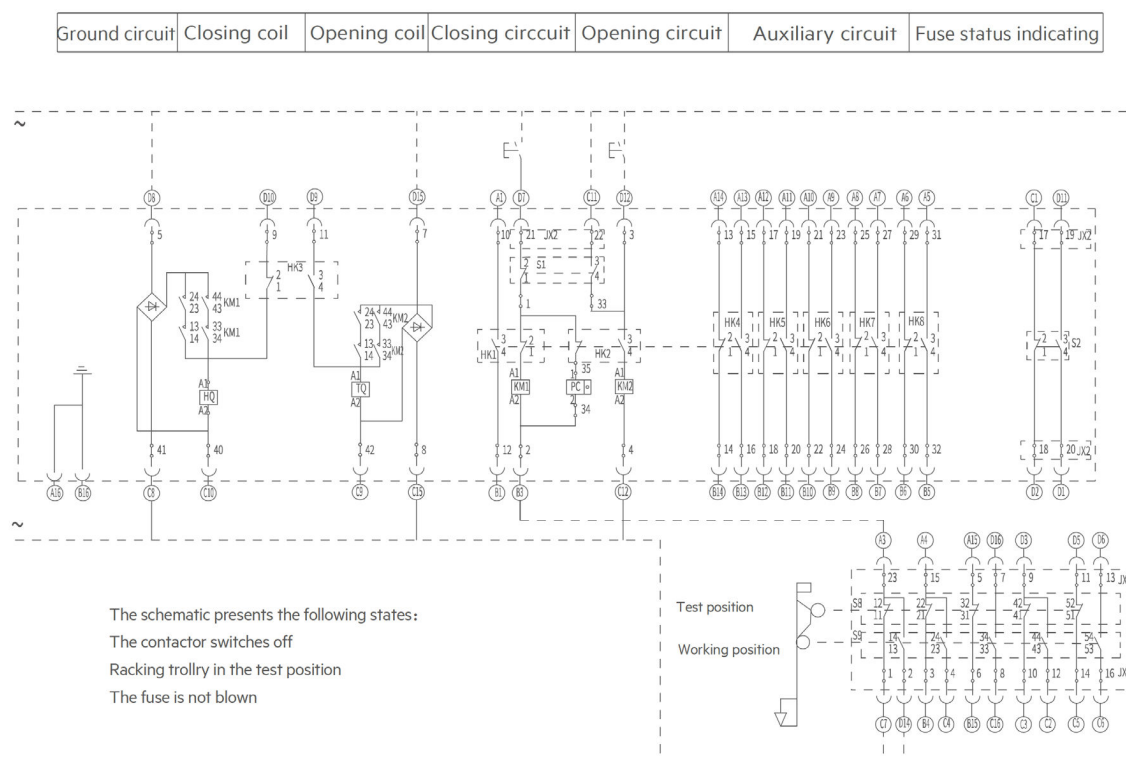
## Electrical circuit Diagram

### Fixed contactor, AC, mechanical holding



The schematic shows the following state: The contactor is switched on

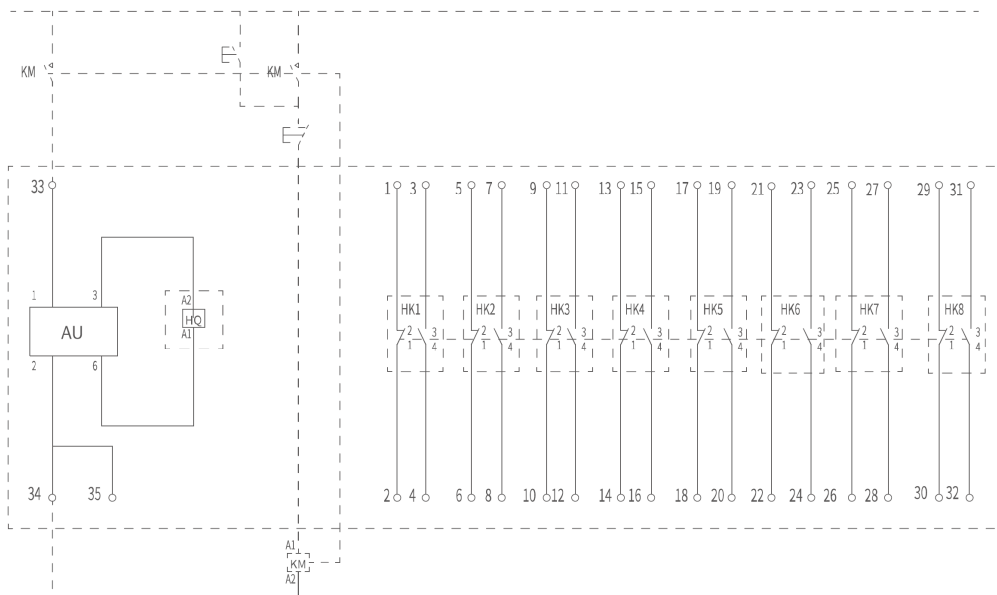
### Withdrawable contactor - fuse combination, AC, mechanical holding





## Fixed contactor, AC/DC, electrical holding

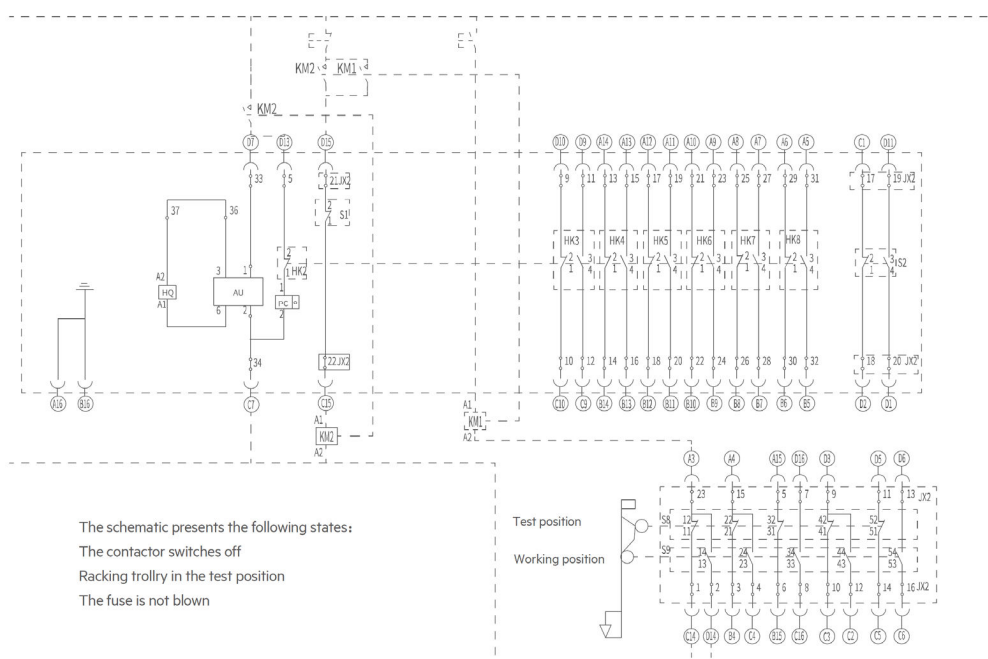
Closing coil	Closing /Opening circuit	Auxiliary circuit
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The schematic shows the following state: The contactor is switched on

## Withdrawable contactor - fuse combination, AC/DC, electrical holding

Ground circuit	Closing coil	Closing /Opening circuit	Auxiliary circuit	Fuse status indicating
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## Fuse Type

### High voltage current limiting fuses for motor protection

Specification sheet for motor protection fuses

Rated voltage (kV)	Fuse model number	Rated current *(A)	Rated maximum breaking current (kA)
7.2	XRNM1-7.2	25 ~ 315	50
	WKND0-7.2M	355	50
12	XRNM1-12	25 ~ 200	50
	WKND0-12M	224	50

\* The specific specification of the rated current of the fuse is referred to the attached table of the outline dimension drawing of the fuse

Calculation for selection of fuses

The rated current of the fuse for direct starting shall be used according to the following formula.

$I_y = N \cdot I_n \cdot d$        $I_n$  — motor full load current       $N$  — Ratio of starting current to full load current, usually  $N=6$   
 $d$  — Synthesis coefficient as expressed       $I_y$  — the current value in the starting time

Starts r/h per hour	2	4	8	16
d	1.7	1.9	2.1	2.3

### High voltage current limiting fuses for transformer protection

Specification sheet of fuses for transformer protection

Rated voltage (kV)	Fuse model number	Rated current *(A)	Rated maximum breaking current (kA)
7.2	XRNM1-7.2	6.3 ~ 250	50
12	XRNM1-12	6.3 ~ 224	50

\* Fuse rated current specific specifications refer to the attached table of fuse dimensions drawing

Reference table for selection of fuses

	Rated voltage (kV)	Recommended fuse specifications													
		100	125	160	200	250	315	400	500	630	800	1000	1250	1600	2000
Transformer capacity (kVA)															
Fuse current (A)	7.2	20	31.5	40	5	50	6	63	80	100	125	125	160	200	
	12	16	16	20	25	25	40	50	63	63	80	100	125	160	200

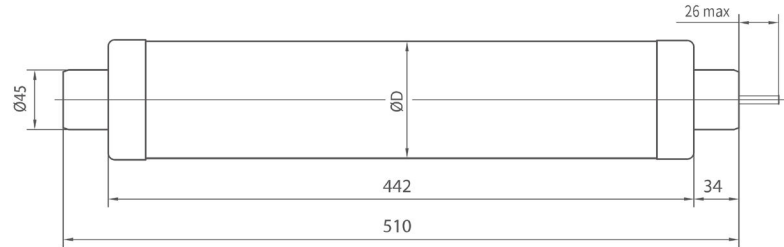
Note: For the specific fuse diagram, see the fuse selection manual



1998, 1999, 2000, 2001, 2002, 2003, 2004, 2005, 2006, 2007, 2008, 2009, 2010, 2011, 2012, 2013, 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021, 2022, 2023, 2024, 2025, 2026, 2027, 2028, 2029, 2030, 2031, 2032, 2033, 2034, 2035, 2036, 2037, 2038, 2039, 2040, 2041, 2042, 2043, 2044, 2045, 2046, 2047, 2048, 2049, 2050, 2051, 2052, 2053, 2054, 2055, 2056, 2057, 2058, 2059, 2060, 2061, 2062, 2063, 2064, 2065, 2066, 2067, 2068, 2069, 2070, 2071, 2072, 2073, 2074, 2075, 2076, 2077, 2078, 2079, 2080, 2081, 2082, 2083, 2084, 2085, 2086, 2087, 2088, 2089, 2090, 2091, 2092, 2093, 2094, 2095, 2096, 2097, 2098, 2099, 2100, 2101, 2102, 2103, 2104, 2105, 2106, 2107, 2108, 2109, 2110, 2111, 2112, 2113, 2114, 2115, 2116, 2117, 2118, 2119, 2120, 2121, 2122, 2123, 2124, 2125, 2126, 2127, 2128, 2129, 2130, 2131, 2132, 2133, 2134, 2135, 2136, 2137, 2138, 2139, 2140, 2141, 2142, 2143, 2144, 2145, 2146, 2147, 2148, 2149, 2150, 2151, 2152, 2153, 2154, 2155, 2156, 2157, 2158, 2159, 2160, 2161, 2162, 2163, 2164, 2165, 2166, 2167, 2168, 2169, 2170, 2171, 2172, 2173, 2174, 2175, 2176, 2177, 2178, 2179, 2180, 2181, 2182, 2183, 2184, 2185, 2186, 2187, 2188, 2189, 2190, 2191, 2192, 2193, 2194, 2195, 2196, 2197, 2198, 2199, 2200, 2201, 2202, 2203, 2204, 2205, 2206, 2207, 2208, 2209, 2210, 2211, 2212, 2213, 2214, 2215, 2216, 2217, 2218, 2219, 2220, 2221, 2222, 2223, 2224, 2225, 2226, 2227, 2228, 2229, 2230, 2231, 2232, 2233, 2234, 2235, 2236, 2237, 2238, 2239, 2240, 2241, 2242, 2243, 2244, 2245, 2246, 2247, 2248, 2249, 2250, 2251, 2252, 2253, 2254, 2255, 2256, 2257, 2258, 2259, 2260, 2261, 2262, 2263, 2264, 2265, 2266, 2267, 2268, 2269, 2270, 2271, 2272, 2273, 2274, 2275, 2276, 2277, 2278, 2279, 2280, 2281, 2282, 2283, 2284, 2285, 2286, 2287, 2288, 2289, 2290, 2291, 2292, 2293, 2294, 2295, 2296, 2297, 2298, 2299, 2300, 2301, 2302, 2303, 2304, 2305, 2306, 2307, 2308, 2309, 2310, 2311, 2312, 2313, 2314, 2315, 2316, 2317, 2318, 2319, 2320, 2321, 2322, 2323, 2324, 2325, 2326, 2327, 2328, 2329, 2330, 2331, 2332, 2333, 2334, 2335, 2336, 2337, 2338, 2339, 2340, 2341, 2342, 2343, 2344, 2345, 2346, 2347, 2348, 2349, 2350, 2351, 2352, 2353, 2354, 2355, 2356, 2357, 2358, 2359, 2360, 2361, 2362, 2363, 2364, 2365, 2366, 2367, 2368, 2369, 2370, 2371, 2372, 2373, 2374, 2375, 2376, 2377, 2378, 2379, 2380, 2381, 2382, 2383, 2384, 2385, 2386, 2387, 2388, 2389, 2390, 2391, 2392, 2393, 2394, 2395, 2396, 2397, 2398, 2399, 2400, 2401, 2402, 2403, 2404, 2405, 2406, 2407, 2408, 2409, 2410, 2411, 2412, 2413, 2414, 2415, 2416, 2417, 2418, 2419, 2420, 2421, 2422, 2423, 2424, 2425, 2426, 2427, 2428, 2429, 2430, 2431, 2432, 2433, 2434, 2435, 2436, 2437, 2438, 2439, 2440, 2441, 2442, 2443, 2444, 2445, 2446, 2447, 2448, 2449, 2450, 2451, 2452, 2453, 2454, 2455, 2456, 2457, 2458, 2459, 2460, 2461, 2462, 2463, 2464, 2465, 2466, 2467, 2468, 2469, 2470, 2471, 2472, 2473, 2474, 2475, 2476, 2477, 2478, 2479, 2480, 2481, 2482, 2483, 2484, 2485, 2486, 2487, 2488, 2489, 2490, 2491, 2492, 2493, 2494, 2495, 2496, 2497, 2498, 2499, 2500, 2501, 2502, 2503, 2504, 2505, 2506, 2507, 2508, 2509, 2510, 2511, 2512, 2513, 2514, 2515, 2516, 2517, 2518, 2519, 2520, 2521, 2522, 2523, 2524, 2525, 2526, 2527, 2528, 2529, 2530, 2531, 2532, 2533, 2534, 2535, 2536, 2537, 2538, 2539, 2540, 2541, 2542, 2543, 2544, 2545, 2546, 2547, 2548, 2549, 2550, 2551, 2552, 2553, 2554, 2555, 2556, 2557, 2558, 2559, 2560, 2561, 2562, 2563, 2564, 2565, 2566, 2567, 2568, 2569, 2570, 2571, 2572, 2573, 2574, 2575, 2576, 2577, 2578, 2579, 2580, 2581, 2582, 2583, 2584, 2585, 2586, 2587, 2588, 2589, 2590, 2591, 2592, 2593, 2594, 2595, 2596, 2597, 2598, 2599, 2600, 2601, 2602, 2603, 2604, 2605, 2606, 2607, 2608, 2609, 2610, 2611, 2612, 2613, 2614, 2615, 2616, 2617, 2618, 2619, 2620, 2621, 2622, 2623, 2624, 2625, 2626, 2627, 2628, 2629, 2630, 2631, 2632, 2633, 2634, 2635, 2636, 2637, 2638, 2639, 2640, 2641, 2642, 2643, 2644, 2645, 2646, 2647, 2648, 2649, 2650, 2651, 2652, 2653, 2654, 2655, 2656, 2657, 2658, 2659, 2660, 2661, 2662, 2663, 2664, 2665, 2666, 2667, 2668, 2669, 2670, 2671, 2672, 2673, 2674, 2675, 2676, 2677, 2678, 2679, 26

## Fuse dimension

Plug-in type:



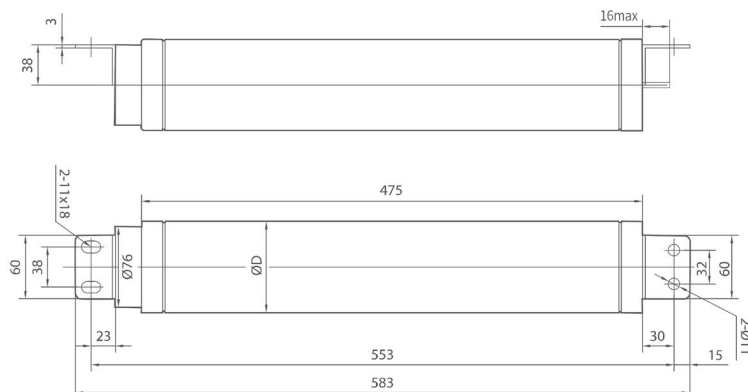
Transformer protection fuse

Model	Rated Current	ØD
XRNT1-7.2	6.3, 10, 16, 20, 25, 31.5, 40	Ø51
	50, 63, 71, 75, 80	Ø67
	100, 125	Ø77
	160, 200, 224, 250	Ø87
XRNT1-12	6.3, 10, 16, 20, 25, 31.5, 40	Ø51
	50, 63, 71, 75, 80	Ø67
	100, 125	Ø77
	160, 200, 224,	Ø87

Motor protection fuse

Model	Rated Current	ØD
XRNT1-7.2	25, 31.5, 40, 50, 63, 80, 100, 125	Ø77
	160, 200, 224, 250, 315	Ø77
XRNT1-12	25, 31.5, 40, 50, 63, 80, 100, 125	Ø77
	160, 200	Ø87

Busway type:



Motor protection fuse

Model	Rated Current	ØD
WKND0-7.2M	355	Ø86
WKND0-12M	224	Ø86

Ordering Check List

CR193 Fixed vacuum contactor

Project

Product

Order Quantity

Rated voltage	<input type="checkbox"/> 7.2kV	<input type="checkbox"/> 12kV		
Rated current	<input type="checkbox"/> 400A			
Holding mode	<input type="checkbox"/> Mechanical holding	<input type="checkbox"/> Electrical hold		
Secondary wiring diagram	<input type="checkbox"/> Fixed DC mechanical holding wiring diagram	<input type="checkbox"/> Fixed AC machinery holding wiring diagram		
	<input type="checkbox"/> Fixed AC/DC holding wiring diagram			
Open/close operating voltage	<input type="checkbox"/> DC110V	<input type="checkbox"/> DC220V	<input type="checkbox"/> AC110V	<input type="checkbox"/> 50kA
Three-phase insulating cower	<input type="checkbox"/> with	<input type="checkbox"/> without		

Special Request:

Signature of buyer

Date

/

/

SecoVac Vacuum Contactor

## Ordering Check List

### CR193 Withdrawable vacuum contactor

**Project** \_\_\_\_\_ **Product** \_\_\_\_\_

**Order Quantity** \_\_\_\_\_

<b>Rated voltage</b>	<input type="checkbox"/> 7.2kV <input type="checkbox"/> 12kV					
<b>Rated current</b>	<input type="checkbox"/> 400A					
<b>Holding mode</b>	<input type="checkbox"/> Mechanical holding <input type="checkbox"/> Electrical hold					
<b>Fuse type</b>	<input type="checkbox"/> Motor protection <input type="checkbox"/> Transformer protection					
<b>Current (A)</b>	<input type="checkbox"/> 6.3A	<input type="checkbox"/> 20A	<input type="checkbox"/> 40A	<input type="checkbox"/> 80A	<input type="checkbox"/> 160A	<input type="checkbox"/> 250A
	<input type="checkbox"/> 10A	<input type="checkbox"/> 25A	<input type="checkbox"/> 50A	<input type="checkbox"/> 100A	<input type="checkbox"/> 200A	<input type="checkbox"/> 315A
	<input type="checkbox"/> 16A	<input type="checkbox"/> 31.5A	<input type="checkbox"/> 63A	<input type="checkbox"/> 125A	<input type="checkbox"/> 224A	<input type="checkbox"/> 355A

**Instructions**

7.2kV motor's protection current range 25A~355A, 7.2kV transformer's protection current range 6.3A~250A

12kV motor's protection current range 25A~224A, 12kV transformer's protection current range 6.3A~224A

<b>Grounding mode</b>	<input type="checkbox"/> Bottom grounding <input type="checkbox"/> Side grounding					
<b>Secondary wiring diagram</b>	<input type="checkbox"/> DC mechanical holding wiring diagram <input type="checkbox"/> AC/DC hold wiring diagram					
	<input type="checkbox"/> AC machinery wiring diagram					
<b>Open/close operating voltage</b>	<input type="checkbox"/> DC110V	<input type="checkbox"/> DC220V	<input type="checkbox"/> AC110V	<input type="checkbox"/> AC220V		

**Special Request:** \_\_\_\_\_

**Signature of buyer** \_\_\_\_\_ **Date** \_\_\_\_\_ / \_\_\_\_\_ / \_\_\_\_\_



# GEIS

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